

# ANTECEDENTS FOR INTERORGANIZATIONAL INFORMATION SHARING: A PROPOSAL FOR RESEARCH

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## ABSTRACT

Information sharing is one of the main processes in the new organizational arrangements based on cooperation. However, for it to take place, the existence of sophisticated technologies is not enough. Other variables have been identified as antecedents for information sharing in interorganizational networks, such as information quality and information policy. This project of research intends to contribute to the understanding of the phenomenon, investigating interorganizational networks of cooperation composed of small and medium enterprises in Portugal. Data will be collected through semi-structured interviews in order to understand more deeply the context as well as through a survey with the companies' managers. The study's results are aimed to enable companies to develop appropriate incentives and mechanisms for information sharing.

## KEYWORDS

Information. Information sharing. Interorganizational relationship. Networks.

## 1. INTRODUCTION

Networks have gained increasing attention in contemporary science as a principle to explain how the world works and as a model for technological, social and institutional arrangements (Almeida Filho, 2005). Considering this development, small and medium enterprises are also seeking new ties with the socio-economic environment through networking. The basic principle behind this new form of arrangement is the need for cooperation; including with the company's own competitors, in order to gain competitive advantages such as cost reduction, innovation and learning.

An important aspect related to the coordination of interorganizational networks is the information sharing process. In literature, this process has been identified as an essential requirement for successful organizations in a competitive environment; as an important prerequisite for collaboration among companies, as an antecedent to the increase in productivity and customer satisfaction; and as an antecedent to increase flexibility in *supply chains* (Perçim, 2008; Sezen, 2008; Fawcett, Wallin, Allred, 2009; Madlberger, 2009).

Due to its importance, new researches have been recommended to identify the factors influencing information sharing within interorganizational networks. Moberg *et al.* (2002) and Madlberger (2009) point out that most research tends to treat information sharing as a component of integration among companies without focusing on information sharing itself.

Fawcett, Wallin and Allred (2009) point out that previous studies about information sharing, specifically those addressing *supply chains*, focus only on the technological aspects and take for granted that the companies involved are predisposed to share information.

Understanding how and why partners are involved in activities of information sharing will also bring gains to the network management. Companies will have a guideline for developing policies, incentives and appropriate mechanisms in order to introduce or to improve the process of information sharing (Madlberger, 2009).

Considering the need for more research in this field, this project aims on identifying the antecedents for the information sharing process among companies acting in cooperative networks.

## 2. RESEARCH MODEL

The conceptual model of this research is composed of 18 independent variables grouped into five dimensions: relation to information, organizational variables, interorganizational variables, network structure and economic variables, as shown in Table 1.

Table 1. Independent variables.

Dimension	Variables	Meaning
Information	Information quality	Accuracy, timeliness and appropriate format.
Organizational	Top management commitment	Knowledge, efforts and investments toward the necessary changes within the company and its partners. Examples of items: the leadership considers information sharing important; the leadership is committed to information sharing; the leadership knows the economic value of the exchange.
	Active information policy	Informational attitudes and behaviors that are part of the culture. Example: the firm has the practice of publishing important information.
	Internal technical readiness	Willingness to change and financial investment in relation to new technologies. Examples of items: awareness of available technologies; willingness to implement; continued usage.
	Organizational size	Larger organizations are more innovative and may hence require technological innovations from others.
	R&D experience	Experience in absorbing new information
Interorganizational	Trust in the partners	Willingness to rely on the cooperation partner. Examples of items: partners genuinely concerned; partners consider our welfare; partners keep promises.
	Relationship's Commitment	Focus on collaboration in the long-term. Examples of items: relationship continues for a long time; relationship is strengthened over time; relationships is considered a "partnership"
	Partner's power	Perception of a firm that it depends on its partner or that the more powerful partner can influence decisions: the firm follows the trading partners' requirements concerning technology; the firm cannot switch to other trading partners easily.
	Heterogeneity	Scope of competences of the networks members
	Partners technical readiness	Technological capabilities of partners. Example of items: the partners have electronic linkages to share information; the partners conduct IT-based collaboration.
Network structure	Actor as a broker	Actor indirectly connecting two others that are not linked.
	Trust in network's leadership	Willingness to rely on an institutional leadership network. Example of items: the leadership is genuinely concerned; the leadership considers our welfare; the leadership keeps promises.
	Ego's density	Number of links to particular members of the network by the potential number of ties.
	Network density	Degree of redundancy of relationships within the network.
	Degree of centrality	Presence of specific nodes that concentrate large number of connections.
Economic	Perceived costs	Improvements in information systems, management efforts, etc.
	Perceived benefits	Lower costs, sales growth, etc

Source: based on Moberg *et al* (2002); Fritsch e Kauffeld-Monz (2008); Madlberger (2009); Moreira (2007); Human e Provan (1997).

The definition of those variables as possible antecedents for sharing information was based on previous researches which had a similar objective. Moberg *et al* (2002) and Madlberger's (2009) models were tested in Supply Chain Networks and the model of Fritsch and Kauffeld-Monz (2008) was tested in innovation networks.

Moberg *et al* (2002) found out that only the variables "information quality" and "relationship's commitment" impact on the exchange of strategic information and not on the exchange of operational

information. Fritsch and Kauffeld-Monz (2008) found out that "trust in partners" and "network density" showed a positive relationship with the exchange of information (meaning transferred and absorbed information). The variable "actor as a broker" showed a positive relationship with the transfer of information to partners. Madlberger (2009) found out that the variable "top management commitment" showed a positive impact on the exchange of strategic information. There was also confirmation of the impact of "internal technical readiness" on exchange of operational information and of "information policy" and "perceived benefits" on the exchange of operational and strategic information.

In addition to the variables of those models, two new variables were added as possible antecedents for the information sharing process: trust in network's leadership and degree of centrality.

"Trust in network's leadership" was introduced due to the results of studies by Moreira and Corvelo. In 2002, those two authors investigated 49 initiatives of induced cooperation among small and medium enterprises in Portugal and found nine cases of success and 40 cases of failure. The authors observed that from a rational point of view, the managers were convinced of the reasons to cooperate; however, few of the cooperative arrangements were functioning successfully. A new longitudinal study from 2002 to 2004 indicated that the success of those arrangements highly depends on the trust of the network's members in their leadership (Moreira, 2007).

The inclusion of the variable "centrality" was based on the theory of Human and Provan (1997). According to them, the benefits that companies gain by participating in networks (among them the exchange of information) depend on the degree of similarity between them and the structures of interaction (density and centrality) and coordination among members. Considering that the degree of similarity and the density are already part of the model, the variable "centrality" was added.

The dependent variable, "information sharing" is intended, following Fritsch and Kauffeld-Monz (2008), to be measured as the extent to which information is transmitted and received. In this research project, information refers to any stimulus that alters the cognitive structure of the receiver. For this to happen, it is understood that the stimulus should be communicated by a sender, the receiver must understand it and acknowledge it as a novelty (Paisley, 1992 apud Lester; Koheler, 2007, p. 19). Considering that the meaning given by the sender of the message may not be the same as given by the receiver, namely that what the sender believes to be information may not be understood or considered as information by the receiver, it is important to distinguish between what is sent and what is received.

### 3. METODOLOGY

The scope of this research is intended to be composed of networks with different objectives located in Portugal. Those networks were chosen for the possibility to compare the results regarding the objectives of the cooperation among companies: production, purchase or innovation. The hypotheses of the study are shown in Table 2.

Table 2. Hypotheses

H1 a, b	Information characteristic will positively impact the process of sending and receiving information
H2 a, b	Organizational factors will positively impact the process of sending and receiving information
H3 a, b	Interorganizational factors will positively impact the process of sending and receiving information
H4 a, b	Network structure will positively impact the process of sending and receiving information
H5 a, b	Perceived costs of information sharing will negatively impact the process of sending and receiving information
H6 a, b	Perceived benefits of information sharing will positively impact the process of sending and receiving information

Source: author

The first phase of the research will be a qualitative research aimed at understanding the process of sharing information in a more profound way in order to obtain new data. This information will allow the revision of the research model previously developed and the questionnaire which will be used in the following quantitative phase. The questionnaire will additionally be validated by experts, from both academia and the business environment. The data collection will be done through semi-structured interviews with the general

managers of each network and the organizations belonging to the networks. The data analysis will be done by comparing the content of the interviews to previously identified theoretical categories.

The quantitative phase will be conducted as an electronic survey using a questionnaire (Table 03) with open and closed questions and a Likert scale from 0 (no occurrence) to 7 (totally agree) points, for both independent and dependent variables. The seven-point scale was chosen for allowing a more precise result than a five-point scale. The items that will be used to measure the variables were applied in previous researches or will be developed by the author. The variables of the interorganizational dimension will be answered based on the most important partners of each company.

Table 3. Overview of the questionnaire

Section	Focus	Information
I	Sample description	<ul style="list-style-type: none"> <li>• Manager: gender, age, education level, education field</li> <li>• Firm: number of employees, annual sales, years in the market</li> </ul>
II	Characterization of participation in the network	<ul style="list-style-type: none"> <li>• How long the firm is a member of the network</li> <li>• Reasons to take part in the network</li> <li>• Kinds of exchanges</li> <li>• Advantages from taking part in the network</li> </ul>
III	Dependent variables: Sending and receiving information	<ul style="list-style-type: none"> <li>• Extent to which the firm sends information (operational, planning, customers, financial)</li> <li>• Extent to which the firm receives information (operational, planning, customers, financial)</li> </ul>
IV	Independent variables	<ul style="list-style-type: none"> <li>• As showed in table 01</li> </ul>
V	Routines and technologies to share information	<ul style="list-style-type: none"> <li>• Routines: meetings, social events, reports, visits, training</li> <li>• Technologies: EDI, Wiki, email, blogs, forums, e-learning, intranet, document management systems</li> </ul>

Source: author

The questionnaire will be pre-tested in order to check its understanding by respondents. The quantitative data will be analyzed by using the SPSS and the UCINET software.

## 4. CONCLUSION

The contributions of this research can be highlighted in four main aspects. Firstly, according to Moberg *et al* (2002) the literature provides little empirical evidence for the factors that influence the process of information sharing. Fritsch, Kauffeld-Monz (2008) as well as Madlberger (2009) also suggest that more research is necessary in order to understand the antecedents of information sharing process. Furthermore, few variables in the three previous research models used as reference were related to the information sharing process. In Moberg's study (2002) none of the variables of organizational dimension showed any relations to the process and in Madlberger's study (2009) none of the variables of the interorganizational dimension showed any relation to the information sharing process. In Moberg *et al's* (2002) view, many variables must have been overstated in literature. Considering these, this study will contribute with more empirical evidence about this subject and present a possibility to re-check the influence of all variables in a different context.

Madlberger (2009), who states that her study was one of the first in this field, also recommends the inclusion of new variables as possible antecedents for sharing information since it is a complex and interdisciplinary subject, which is being done in this research project. Madlberger also underscores the importance that the model used by her should be validated in other industries, other countries and networks in different stages of maturity. It is not intended to reapply the Madlberger's model, but to test the research model in other networks and with data from another country.

Thirdly, the comparison of different types of networks will bring insights regarding to what differentiates the process of sharing according to the goal of the collaboration among companies.

Finally, the results will contribute to network managers and members to propose policies and more appropriate incentives for effective information sharing within a network.

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